For little ones to grow…

Vitality comes from within

by Henrike Scheel, Budenheim

Healthy, lively, energetic and vital – that's how we want our babies to grow up.

Minerals are essential in baby food. In the growth phase, the healthy development of bones and teeth requires calcium, magnesium and phosphorus. Iron and potassium also play an important part in maintaining a healthy heart and blood circulation.

Infant formulas provide proteins, minerals and other nutrients that give babies a healthy start in life.

Calcium is at the top of the list of nutrients used in fortified kids' foods worldwide as it is vital for the health and functioning of heart and muscle tissue.

As a matter of fact, many children and adults do not achieve the recommended level of calcium in their diet. Kid's nutrition therefore needs special attention and responsibility.

Sources of calcium in infant formulas > Babies do not only need minerals but also phosphorus. Phosphorus is a basic component of bones and teeth and therefore essential in babies' nutrition. The recommended nutrient levels are established on the basis of the recommended daily allowance (RDA). They are given in the "Annex to Directive 90/496/EEC" that defines the daily dietary intake level of a nutrient considered to be sufficient. Sufficiency in this respect means meeting the requirements of almost all healthy individuals (97–98 %) in each life-stage and gender group.

Calcium intake can be achieved by the addition of different types of calcium salts to processed food. The calcium contents in these salts differ from 9 % to 40 %. As a matter of fact, a recent market study (Source: Giract Switzerland) confirms that phosphates

	EU-RDA	Dosage*[1]/100 g or 100 ml or one package unit
Calcium	**800 mg**	120 mg
Phosphorus	**700 mg**	105 mg
Sodium	approx. 1000 mg	56 mg
Potassium	approx. 2000 mg	
Magnesium	375 mg	
Iron	14 mg	2.10 mg

*[1]according to 15 % of DV/requested by law for nutritional labelling

Recommended Dietary Allowances (RDAs) of calcium, phosphorus and other major elements
Source: Annex to Directive 90/496/EEC

are the preferred calcium salts (52 %) when it comes to calcium fortification in infant formulas. The calcium content of calcium phosphates is between 22 % (dicalcium phosphate) to 40 % (tricalciumphosphate).

The reason for the preference and for the advantage of calcium phosphates lays on the combination of calcium and phosphorous. Its ratio is particularly advantageous (2:1) in tricalciumphosphates.

Role of calcium phosphates in baby food > Besides their nutrient value for mineral enrichment, calcium phosphates beneficially adjust the products' pH-value and serve as stabilizer.

The neutral colour and taste of calcium phosphates make them particularly suitable for use in milk- and soy-based infant formulas, follow-up formulas such as fruit preparations and toddler formulas. Physical specifications, such as the proper particle size, are important criteria in liquid and powder premixes as they guarantee for optimal sensoric properties of the end product. Good flowing quality and storability are needed to control dosage during production accurately.

Due to their high bioavailability and stability, calcium phosphates are the most appropriate for mineral fortification of nutritive food. Tricalciumphosphates are especially ideal to be applied as carrier material for aromatic ingredients or vitamin blends.

Highest purity for highest demands > Babies and toddlers need protection! Apart from high requirements concerning the nutritive profile and the technical properties, the selection of ingredients for infant nutrition requires highest purity levels. Contaminants are a vast subject area of food safety and quality. Therefore the JECFA (Joint expert committee of food additives) and the WHO (World Health Organization) recommend lowest levels of contaminants.

All infant formula brands in the United States are required to adhere to the U.S. Food and Drug Administration (FDA) guidelines for nutrients in infant formulas. The EU Directive 2006/141 seeks to ensure that the essential composition of infant formulas and follow-on formulas satisfy the nutritional requirements of infants in good health as established by generally accepted scientific data.

Those legislations and requirements ensure that infant formulas do not contain any undesirable substances that might endanger the health of infants and young children. A draft proposal for an EU-regulation concerning the criteria of food additive purity for infant formulas has been circulated and is currently under discussion. Despite all these regulations, the bitter truth is that commercially available and branded infant formulas used by literally millions of parents to feed children up to 12 months-plus are still contaminated with aluminium.

Different studies emphasize the vulnerability of infants to early exposure to aluminium and highlight the need to reduce levels of aluminium and other contaminants in infant formulas. Producers of food ingredients must be aware of the responsibility they share with manufacturers of infant formulas. High pure ingredients are the key to healthy and safe infant formulas and so the secret to success.

Proper addition to baby's nutrition > Ingredients for sensitive applications such as baby food must guarantee the highest standards of quality and safety. They must meet all specific requirements for the production of infant formulas and be in compliance with the highest international standards for food production.

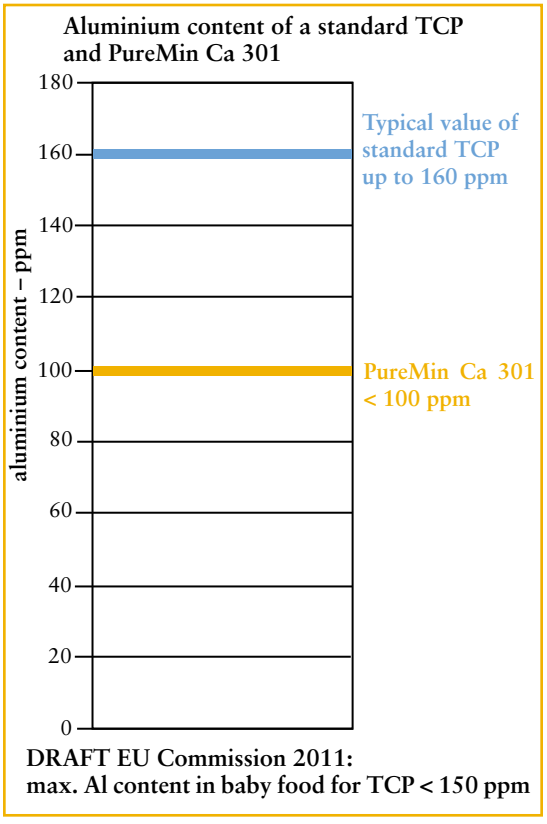
Budenheim, a leading manufacturer of phosphate specialties, has recently developed PureMin. This new range of calcium-, potassium- and sodium phosphates is specifically designed for use in baby food. Low levels of contaminants such as aluminium, mercury, lead and cadmium guarantee the crucial safety and security in the production of infant formulas. PureMin calcium phosphates significantly undercut the average aluminium content of standard calcium phosphates.

For its PureMin products, Budenheim has defined a special process applying the strictest controls at every stage of production. Traceability embraces every step: from the selection of raw materials, the analysis of incoming goods, the manufacturing process, additional controls and the analysis by batch up to the delivery of PureMin. PureMin guarantees aluminium levels < 100 ppm as well as lowest levels of other contaminants combined with highest microbiological purity.

Besides the different types of calcium-, sodium-, and potassium phosphates, iron and magnesium phosphates are under development and will be launched soon.

Only ingredients with guaranteed purity, offer a reliable raw material source and support manufacturers to fulfil safety demands and to be in line with legal requirements and international legislations.

Hereunder the example of tricalciumphosphate:



Source: Budenheim analysis/specification

Delivering best condition for child nutrition requires a deep sense of responsibility on the manufacturer's side as well as on the ingredient supplier's side. Both need to work hand in hand to meet the demands of their „little" customers to grow.

For further information, please contact:
Markus Brümmer, Business Development Manager
Chemische Fabrik Budenheim KG
Business Unit Food Ingredients
Rheinstr. 27, 55257 Budenheim, Germany
Telephone: +49 6139 89400, Fax: +49 6139 89264
E-Mail: nutrition@budenheim.com
www.budenheim.com

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Chemische Fabrik Budenheim KG
Business Unit Food Ingredients

Rheinstrasse 27
55257 Budenheim
Germany

Phone: +49 6139 89-400

Budenheim USA, Inc.
Business Unit Food Ingredients

2219 Westbrooke Drive
Columbus, Ohio 43228
USA

Phone: +1 614 3452-400

Budenheim México S.A. de C.V
Business Unit Food Ingredients

Lerdo de Tejada 880 Ote.
Zona Industrial El Lechugal
C.P. 66350 Santa Catarina, N.L.
México

Phone: +52 81 8215 3000

E-mail: nutrition@budenheim.com
www.budenheim.com

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